

# THE MINERAL INDUSTRY OF QATAR

By Philip M. Mobbs

Except for hydrocarbons, Qatar had few mineral resources. There was some production of clay, dolomite and limestone, gypsum, sand, and shale. Processed mineral-based commodity production included cement, direct-reduced iron, lime, and crude steel; petrochemical plant output included ammonia, methanol, sulfur, and urea.

Exploitation of natural gas and oil accounted for about 57% of the Qatari economy. According to the International Monetary Fund (2004<sup>1</sup>), the Qatari gross domestic product (GDP) based on purchasing power parity was estimated to be \$18.7 billion<sup>2</sup> and the per capita GDP based on purchasing power parity was estimated to be \$25,214 in 2003.

Qatar's estimated oil reserves were 15.2 billion barrels. Estimated to be about 25.8 trillion cubic meters, Qatar's proven natural gas reserves were the third largest in the world. Other countries with notable proven natural gas reserves included Russia (47 trillion cubic meters), Iran (26.7 trillion cubic meters), Saudi Arabia (6.7 trillion cubic meters), the United Arab Emirates (6.1 trillion cubic meters), the United States (5.2 trillion cubic meters), Nigeria (5 trillion cubic meters), and Algeria (4.5 trillion cubic meters). In 2003, the nation produced 30 billion cubic meters of natural gas, which placed Qatar 19th on the list of major gas-producing countries. The Government continued to vigorously develop the country's natural gas resources, given the available reserve base and international demand. Several gas utilization programs that would significantly increase national natural gas production were under evaluation or underway. These included the construction of gas-to-liquids plants, additional liquefied natural gas (LNG) trains, and international gas pipelines. Unlike many other countries with natural gas reserves, about 98% of Qatar's gas was unassociated gas; only 425 billion cubic meters was associated with the oilfield production and thus impacted by the Organization of the Petroleum Exporting Countries (2004, p. xii-xiii, 9, 11) production quotas (BP p.l.c., 2004, p. 4, 20; Sastry, 2004, p. 5, 9, 11-14, 16; U.S. Energy Information Administration, 2003§; Ford, 2003§).

## Trade

Provisional estimates of total exports from Qatar were valued at \$12.6 billion in 2003 compared with \$11.0 billion in 2002. Petroleum and petroleum products accounted for about 91% of the value of total exports. About 210 million barrels (Mbbbl) of crude oil and products was exported of the nearly 274 Mbbbl of crude oil produced in 2003. About 69% of the country's oil exports was shipped to Japan. Total imports were \$5.4 billion in 2003 compared with \$4.3 billion in 2002 (Qatar Central Bank, 2004, p. 6; Ministry of Foreign Affairs, undated§).

## Commodity Review

As part of the Government's privatization program, Industries Qatar Co. was established in 2003 and the ownership interest in Qatar Fertilizer Co., Qatar Fuel Additives Co., Qatar Petrochemical Co., and Qatar Steel Co. that had been held by Qatar Petroleum (QP) was transferred to Industries Qatar. QP retained 80% of the stock of Industries Qatar; 15% equity interest was sold on the Doha Stock exchange to investors; and 5% of the stock was distributed to charitable organizations, such as the Qatar Foundation for Education, Science, and Community Development and the Government's Ministry of Awqaf and Islamic Affairs (Al-Attiyah, 2003a§).

## Metals

**Aluminum.**—In December, the proposed joint venture in which the Ferrostaal AG of Germany, JGC Corp. of Japan, and United Development Co. partnership was to acquire 51% equity interest and Dubai Aluminium Co. Ltd. to acquire the remaining 49% was terminated. The Ferrostaal partnership then formed Doha Aluminium Co. (Dohal) to operate a proposed \$2.1 billion to \$2.6 billion aluminum smelter at Ras Laffan. The smelter was to have an initial capacity of 516,000 metric tons per year (t/yr) and was designed to be expanded to 1 million metric tons per year (Mt/yr) (Metal Bulletin, 2003; Middle East Economic Digest, 2003a, b; Peninsula, The, 2004§).

**Iron and Steel.**—In 2003, Qatar Engineering for Steel Mesh Co. was established to operate a proposed \$8.2 million 30,000-t/yr-capacity steel mesh plant. The plant would produce 8- and 12-millimeter mesh from steel imported from Saudi Arabia, Turkey, and the United Arab Emirates (Middle East North Africa Financial Network, Inc., 2003b§).

Qatar Steel Co. planned to expand its 400,000-t/yr-design-capacity Midrex process direct-reduction iron plant to 1.6 Mt/yr and to add 500,000 t/yr of new steel capacity to the existing 920,000-t/yr capacity. Total cost of the projects was estimated to be in the range of \$300 million to \$400 million (Cooke, 2001, p. 444; Middle East Economic Digest, 2003a).

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<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited section.

<sup>2</sup>Where necessary, values have been converted from Qatari rials to U.S. dollars at the average exchange rate of QR3.6372=US\$1.00 for 2003 and QR3.6370=US\$1.00 for 2002.

## Industrial Minerals

Qatar National Cement Co. planned to build an additional 1-Mt/yr-capacity cement plant. The new \$123 million plant would be built adjacent to its two existing cement plants at Umm Bab (Middle East Economic Digest, 2003b; American Chamber of Commerce in Egypt, 2004§).

## Mineral Fuels

A number of mineral sector projects have been proposed in the mineral fuels and related materials sector. Qatar Industrial Manufacturing Co. had proposed to build a 20,000- to 50,000-t/yr-capacity carbon black plant. The \$115 million Ras Laffan Helium project of Ras Laffan Liquefied Natural Gas Co. Ltd. (RasGas), RasGas II, and Qatar Liquefied Natural Gas Co. Ltd. (Qatargas) was scheduled to begin to produce about 19 million cubic meters per year of helium in 2005. Qatar Fertilizer Co. proposed a 5,000-metric-ton-per-day (t/d)-capacity methanol facility at Mesaieed, and the joint venture of QP and PetroWorld Ltd. of South Africa planned to build a 12,000- to 15,000-t/d-capacity methanol plant at Ras Laffan by 2008 (Middle East Economic Digest, 2003b; Oil & Gas Journal, 2003; Middle East North Africa Financial Network, Inc., 2003a§).

**Natural Gas.**—In March, QP inaugurated its fourth natural gas liquids plant at Mesaieed. The new plant was designed to recover about 20 million barrels per year (Mbbl/yr) of ethane, 14 Mbbl/yr propane, 8 Mbbl/yr butane, and 2 Mbbl/yr condensate from raw natural gas production (Qatar Petroleum, 2003a).

The construction of a \$900 million 12.4-Mbbl/yr natural-gas-to-liquids (GTL) plant for Oryx GTL Ltd. (which was a venture of QP and Sasol Synfuels International Ltd. of South Africa) began in December. QP and Qatar Shell GTL Ltd. proposed to build a \$5 billion 51-Mbbl/yr GTL plant at Ras Laffan in two phases, with initial output of about 26 Mbbl/yr to start in 2008. QP also planned to build additional GTL plants at Ras Laffan with ConocoPhillips Co., Exxon Mobil Corp. (ExxonMobil), and Marathon Corp. In 2003, Ivanhoe Energy Inc. withdrew its proposal for a GTL plant at Ras Laffan (Al-Attayah, 2003b§; Peninsula, The, 2003§).

The Qatargas II project was a planned two-train 15.6-Mt/yr-capacity LNG facility that would raise Qatargas' total capacity to 23.1 Mt/yr. The proposed Qatargas III project would add a sixth LNG train (with a 7.5-Mt/yr-capacity) to the Qatargas operation. RasGas planned to build five additional LNG trains with a total capacity of 29.7 Mt/yr. The 33-million-cubic-meter-per-year-capacity Dolphin natural gas pipeline from Qatar to the United Arab Emirates, the 17-million-cubic-meter-per-year-capacity Gulf South Asia gas pipeline extension of the Dolphin pipeline to Pakistan via Oman, and the 10-million-cubic-meter-per-year-capacity Qatar/Kuwait pipeline were planned to move natural gas to international consumers. QP, ExxonMobil, and Total S.A. proposed to build a \$400 million 51.1-million-barrel-per-day-capacity condensate refinery at Ras Laffan (Middle East Economic Digest, 2003b; Oil & Gas Journal, 2003; Exxon Mobil Corp., 2004, p. 45; Middle East North Africa Financial Network, Inc., 2003a§; Ras Laffan Liquefied Natural Gas Co. Ltd., 2003§).

**Oil, Crude.**—In 2003, crude oil production increased by more than 19%. Oil production in Qatar was increased to offset the world market's loss of Iraqi crude during the Iraq invasion. The significant increase in refined petroleum production was the result of the 2002 expansion of the refining capacity.

In September, Qatar Petroleum Development Co. (a venture of Cosmo Oil Co Ltd., Nissho Iwai-Nichimen Holdings Corp., and United Petroleum Development Co. Ltd.) agreed to additional development of the Al Karkara and A-North oilfield for QP. Included in the \$126.5 million project were four new wells and a sidetrack of an existing well. Additional production was scheduled to come online in January 2005 (Qatar Petroleum, 2003b).

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## Major Source of Information

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TABLE 1  
QATAR: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	1999 <sup>e</sup>	2000	2001	2002 <sup>e</sup>	2003 <sup>e</sup>
Cement, hydraulic <sup>e</sup>	1,025,000 <sup>3</sup>	1,210,000 <sup>r</sup>	1,240,000 <sup>r</sup>	1,340,000 <sup>r</sup>	1,400,000
Gas, natural:					
Gross million cubic meters	32,000	33,656	37,132	39,000	40,000
Dry do.	24,000	26,141	27,738	29,300	30,000
Iron and steel:					
Direct-reduced iron	670,000	620,962	733,549	750,000	780,000
Steel, crude	629,000	743,615	907,608	1,027,000 <sup>r, 3</sup>	1,054,000 <sup>3</sup>
Semimanufactures:					
Billet	600,000	728,780	891,117	900,000	900,000
Bars	600,000	579,525	713,500	715,000	700,000
Natural gas liquids thousand 42-gallon barrels	49,000	24,126	26,726	27,000	28,000
Nitrogen:					
N content of ammonia	1,129,600 <sup>3</sup>	1,097,000	1,159,118	1,166,100 <sup>3</sup>	1,185,300 <sup>3</sup>
N content of urea	757,000	770,761	779,388	798,700 <sup>3</sup>	800,000
Petroleum:					
Crude thousand 42-gallon barrels	232,000	231,000	237,000	230,000	274,000
Refinery products: <sup>e</sup>					
Gasoline do.	5,400	4,521 <sup>3</sup>	4,948 <sup>3</sup>	4,020 <sup>r</sup>	14,900
Kerosene do.	3,900	2,997 <sup>3</sup>	3,911 <sup>3</sup>	2,450 <sup>r</sup>	7,370
Distillate fuel oil do.	4,900	4,490 <sup>3</sup>	3,824 <sup>3</sup>	4,340 <sup>r</sup>	7,370
Residual fuel oil do.	6,750	6,264 <sup>3</sup>	4,492 <sup>3</sup>	2,850 <sup>r</sup>	2,880
Other do.	1,600	736 <sup>3</sup>	514 <sup>3</sup>	2,100 <sup>r</sup>	9,560
Total do.	22,600	19,008 <sup>3</sup>	17,689 <sup>3</sup>	15,800 <sup>r</sup>	42,100
Stone, limestone <sup>e</sup>	900,000	900,000	900,000	900,000	900,000
Sulfur	155,000	190,868	220,824	221,000	221,000

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits and may not add to totals shown. <sup>r</sup>Revised.

<sup>1</sup>Table includes data available through July 2004.

<sup>2</sup>In addition to commodities listed, clays, dolomite, gypsum, limestone, sand and gravel, and shale for construction purposes, and methanol are produced in Qatar, but available information is inadequate to make estimates of output.

<sup>3</sup>Reported figure.